ENTOMOLOGICAL NEWS

NOVEMBER, 1937

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Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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ENTOMOLOGICAL NEWS

VOL. XLVIII. NOVEMBER, 1937 No. 9

Zodion fulvifrons Say (Diptera: Conopidae), a Parasite of the Honey Bee.

By H. C. SEVERIN, South Dakota State College, Brookings, South Dakota.

On October 1, 1936, the writer received about 150 specimens of honey bees from a beekeeper residing at Sisseton, South Dakota, together with a complaint that he was experiencing a rather heavy loss of young worker bees in one of his hives. The bees which were sent were all workers and while many of them were young bees, others were not. When the bees arrived they were dead, but the correspondent stated that most of these bees were still alive but very weak when he picked them up in front of his hive. The weakened bees were being dragged out of the hive by the normal bees and were dropped on the ground in front of the hive. The correspondent further stated that apparently only worker bees were affected, although drones were plentiful in this particular hive.

When the bees were examined, it was found that fully 50 per cent were infested with fly larvae. The larvae were always located in the abdomen of the host, the posterior end being directed backward, the attenuated anterior end forward. Usually but one fly larva was found in a bee, but occasionally two maggots were found living peacefully within the abdomen of the same worker bee.

When the parasitized bees were received, the majority were placed in a glass rearing jar containing moist sand. Within a day some of the fly maggots had pupated, while others required an additional day or two before doing so. Pupation took place within the abdomens of the bees in all cases, and in all instances except one, the puparia were entirely within the abdomens of the bees. In the exception, the parasitic maggot

had evidently ruptured the intersegmental membrane between two segments of the abdomen and had made its way partly through the rupture and then pupated.

The rearing jar containing the puparia was kept in a well heated room whose temperature ranged between 70° and 80° F. At the end of two weeks, flies began to emerge from the puparia, and at the end of the third week all the puparia had given rise to flies. The reared flies were identified as a species of *Zodion*, but were sent to the United States National Museum for further identification. Dr. David G. Hall, of the Bureau of Entomology and Plant Quarantine, identified the flies as *Zodion fulvifrons* Say and reported that the species had been received at the United States National Museum three times as a parasite of the honey bee, once from Laredo, Texas, once from Norwichtown, Connecticut and now from Sisseton, South Dakota. It is of further interest that the collection of insects of South Dakota State College contained five additional specimens of this species of fly, all taken by the writer during the month of August at Brookings, South Dakota. Evidently this species of fly has a rather large range, but just how important it is in an economic way to the beekeeper can only be determined by further investigation. It should be noted here that the genus *Physocephala*, family Conopidae, contains several species whose larvae have been found to be parasitic in honeybees.*

The Parasites of the Fall Webworm. Hyphantria cunea Drury. (Lep.: Arctiidae).

By Ralph B. Swain, Department of Biology, University of Colorado.

The fall webworm, *Hyphantria cunea* Drury, periodically a serious pest of deciduous trees in the United States and Canada, is thought to be largely controlled by insect parasites and predators. During the course of graduate work at the Colorado

* Van Duzee, M. C. 1934. Conopidae from North Dakota and the Rocky Mountain Region. Ann. Ent. Soc. America, 27: 315-323.

State College, the writer reared nine species of parasites not previously recorded from this host. The specimens were kindly determined by Mr. R. A. Cushman, Mr. A. B. Gahan, and Mr. C. F. W. Muesebeck of the United States National Museum, and Dr. H. J. Reinhard of the Agricultural Experiment Station at College Station, Texas. In the following lists, the names preceded by one asterisk are of species reared from webworms in the Fort Collins, Colorado area; those preceded by two asterisks are of species from the same locality, but here recorded for the first time as parasites of *Hyphantria.* The lists, it is hoped, include the names of all the dipterous and hymenopterous insects known to be parasites of the fall webworm. These lists are a portion of a thesis written in partial fulfillment of the requirements for the Master of Science Degree at the Colorado State College.

THE TACHINID PARASITES (Diptera).

Achactoneura aletia Riley (15).
Achactoneura frenchii Will. (15).
Anetia hyphantriae Tothill (15).
Bombyliomyia abrupta Wied. (15).
Compsilura concinnata Meig. (2).
Ernestia ampclus Walk. (18).
Ernestia johnsoni Tothill (18).
Hyphantrophaga hyphantriae Town. (20).
Lydella hyphantriae Tothill (19).
Masicera entfitchiae Town. (21).
Nemoraea nigricornis Town. (21).
Panzeria radicum Fabr. (4).
Phorocera claripennis Macq. (15).
***Phorocera floridensis* Town. (Det. H. J. Reinhard.)
Varichoeta aldrichi Town. (9).
Winthemia sp. (15).
Zenillia blanda O. S. (15).
**Zenillia blanda virilis* A. & W. (15) (Det. H. J. Reinhard.)
Zenillia protuberans A. & W. (15).

THE PRIMARY HYMENOPTEROUS PARASITES.

BRACONIDAE.

Rogas hyphantriae Gahan (8).
Apanteles diacrisiae Gahan (12).
Apanteles hyphantriae Riley (13).

Apanteles lacteicolor Vier. (1).
Meteorus communis (Cress.) (13).
*******Meteorus acronyctae* Mues. (Det. C. F. W. Muesebeck.)
Meteorus bakeri C. & D. (3).
Meteorus hyphantriae Riley (13).
Meteorus versicolor Wesmael (11).

ICHNEUMONIDAE.

Amblyteles brevicinctor (Say) (15).
Amblyteles subcyaneus (Cress.) (15).
Itoplectis conquisitor (Say) (6).
Eremotylus glabratus (Say) (14).
Labrorychus sp. (15).
Therion morio (Fabricius) (9).
Therion sassacus Vier. (15).
Casinaria orgyiae (How.) (15).
Neonortonia major (Cress.) (15).
Hyposoter fugitivus (Say) (1).
*******Hyposoter fugitivus pacificus* Cush. (Det. R. A. Cushman.)
Hyposoter pallipes (Prov.) (13).
******Hyposoter pilosulus* (Prov.) (7). (Det. R. A. Cushman.)
Eulimneria valida (Cress.) (17).

SCELIONIDAE.

Telenomus bifidus Riley (13).

CHALCIDOIDEA.

Syntomosphyrum esurus Riley (1).
******Elachertus hyphantriae* Crawford (5). (Det. A. B. Gahan.)
Elachertus marylandicus Gir. (15).
Euplectrus sp. (13).
*******Trichogramma minuta* Riley (Det. A. B. Gahan.)

SECONDARY HYMENOPTEROUS PARASITES.

ICHNEUMONIDAE.

******Hemiteles tenellus* (Say) (13). (Det. R. A. Cushman.)
Hosts: *Meteorus hyphantriae* Riley, *M. acronyctae* Mues., *Hyposoter pilosulus* (Prov.)
Hemiteles spp. (Two species, not *tenellus*.) (13).
Hosts: *Apanteles hyphantriae* Riley, *Meteorus hyphantriae* Riley.
*******Gelis utahensis* (Strick.) (Det. R. A. Cushman.)
Host: *Hyposoter pilosulus* (Prov.)

CHALCIDOIDEA.

******Perilampus hyalinus* Say (16). (Det. A. B. Gahan.)

Hosts: *Hyposoter fugitivus* (Say), *H. pilosulus* (Prov.)

Panstenon sp. (13).

Host: *Apanteles hyphantriae* Riley.

Spilochalcis sp. (13).

Host: *Meteorus hyphantriae* Riley.

Eupelmus sp. (13).

Hosts: *Apanteles hyphantriae* Riley, *Meteorus hyphantriae* Riley.

**Dibrachys cavus* Walker (1). (Det. A. B. Gahan.)

Hosts: *Eulimneria valida* (Cress.), *Hyposoter fugitivus* (Say), *H. pilosulus* (Prov.), *Itoplectis conquisitor* (Say), *Meteorus hyphantriae* Riley, *M. acronyctae* Mues.

Habrocytus sp. (8).

Host: *Rogas* sp.

***Hypopteromalus percursor* Gir. (Det. A. B. Gahan.)

Hosts: *Meteorus acronyctae* Mues., *Hyposoter pilosulus* (Prov.)

***Hypopteromalus* sp. (Det. A. B. Gahan.)

Host: *Hyposoter pilosulus* (Prov.)

Pteromalus spp. (Two unidentified species.) (13).

***Catolaccus aeneoviridis* (Gir.) (Det. A. B. Gahan.)

Hosts: *Meteorus acronyctae* Mues., *Hyposoter pilosulus* (Prov.)

Cirrospilus sp. (13).

Host: *Apanteles hyphantriae* Riley.

Elasmus atratus How. (10).

Hosts: *Apanteles hyphantriae* Riley, *Hyposoter pallipes* (Prov.)

TERTIARY HYMENOPTEROUS PARASITES.

CHALCIDOIDEA.

***Tetrastichus doteni* Crawford (Det. A. B. Gahan.)

Hosts: *Dibrachys cavus* Walker, *Catolaccus aeneoviridis* (Gir.) The above two species were reared from both *Hyposoter pilosulus* (Prov.) and *Meteorus acronyctae* Mues.

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Record of a Butterfly Migration (Pyrameis cardui) (Lepid.: Nymphalidae).

By R. W. Dawson, University of Minnesota.

On August 2, 1935, the writer drove by car from Edgemont, South Dakota to Wheatland, Wyoming, through the path of a migrating swarm of the thistle butterfly *Pyrameis cardui.* The butterfly was first noted as common near Edgemont at about

nine o'clock in the morning. But the reverie of peace and contentment that pervades one when driving in this country dulled the writer's sense of perception for more than an hour before the realization came that a butterfly migration was in full swing. Then the car was stopped and a count of the butterflies made. The data recorded in the field follow:

Lusk, Wyoming, 10.30 A. M., temperature 74 F., elevation 5,300 feet, sky clear, light southwest wind; 148 butterflies crossed a measured section of 150 feet on the highway during a five-mile count. The butterflies were flying in parallel lines directly into the wind over a grassy plain and were from two to three feet above the ground. Mute, but positive, evidence that the butterflies were not of local origin was offered by the numerous thistle stalks along the highway which were in nearly complete and perfect foliage.

After this stationary count seven additional counts of five-minute periods were made while driving at an average speed of thirty miles per hour and recording the butterflies crossing the highway within an estimated distance of one hundred feet in front of the car—a distance convenient for vision under the circumstances.

These counts follow:

10.45 to 10.50, near Lusk .....63 butterflies
11.10 to 11.15, near Keeling ..... 9 butterflies
11.50 to 11.55, near Shawnee .... 7 butterflies
12.00 to 12.05, near Orin .....40 butterflies
1.55 to 2.00, near Glendo .....48 butterflies
2.10 to 2.15, near Glendo .....23 butterflies
2.25 to 2.30, near Wheatland .. 0 butterflies

From Wheatland, Wyoming, onward no further evidence of migration was noted, apparently the pathway of the moving swarm had been crossed, but it required a drive of 160 miles (42 west and 118 south) to accomplish it.

Dr. Harold Shepard informs me that he saw a continuation of the flight the following day between the mouth of Shell Canyon and Graybull, Wyoming. The butterflies were "numerous" and flying east of south-east. The time was late afternoon.

The above recorded migration is the third which the writer has been privileged to witness. The first was of the snout butterfly *Lybethia bachmanni,* August 20, 1916, at Mitchell, Nebraska, the second, of *Kricogonia lycide,* March 24, 1933, near Artesia Wells, Texas. These two records with some additional notes have been reported by Dr. C. B. Williams.

In recording this note it is the writer's hope that he may help others to see and record insect migrations in this country. They are probably much more frequent and important than is generally realized.

The Coleoptera or Beetles of Georgia (V).

By P. W. Fattig, Emory University, Georgia.

(Continued from Volume XLVIII, page 10.)

PSEPHENIDAE.

9586—Psephenus herricki DeKay. Blue Ridge VI, 27, 31 (2).

DRYOPIDAE.

9597—Pelenomus obscurus Lec. Quitman VI, 17, 31.

9603—Helichus lithophilus Germ. Hamilton IV, 28, 31; V, 20, 31; Ellijay V, 14, 31; VI, 27, 31 (2); Columbus V, 20, 31 (9); Cartersville V, 22, 31 (4); Dahlonega V, 23, 31 (5); Dalton V, 23, 31 (5); Ringgold V, 23, 31; V, 25, 31 (3); Rome V, 23, 31; V, 26, 31 (3); VI, 30, 31 (2); VII, 17, 31 (5); Summerville V, 26, 31 (7); Milledgeville V, 31, 31; Macon VI, 1, 31 (2); Monroe VI, 12, 31 (2); Blue Ridge VI, 27, 31; Alpharetta VII, 9, 31; Jasper VII, 17, 31 (6).

9604—H. fastigiatus Say. Hamilton IV, 28, 31; V, 20, 31 (2); Newman IV, 28, 31 (3); V, 19, 31 (3); Blue Ridge V, 14, 31; VI, 27, 31 (8); Dalton V, 23, 31; Milledgeville V, 31, 31 (2); Macon VI, 1, 31 (2); Snellville VI, 12, 31 (2); Cleveland VI, 24, 31; Hiawassee VI, 26, 31 (2); Ellijay VI, 27, 31 (4).

9604—H. basalis Lec. Hamilton IV, 28, 31; V, 20, 31 (2); Ellijay V, 14, 31; VI, 27, 31 (4); Dalton V, 23, 31 (3); Blue Ridge VI, 27, 31 (7); Ball Ground VI, 27, 31; Dahlonega VII, 9, 31.

HELMIDAE.

9608—Stenelmis sinuata Lec. Thomasville VI, 18, 31.

9610—S. bicarinata Lec. Cairo VI, 18, 31.

21075—S. fuscata Blatch. Augusta VI, 9, 32.

S. sp. Blue Ridge VI, 27, 31; Ellijay VI, 27, 31.

HELMIS DIETRICHI Musgrave. Wrens VII, 7, 31.

9640—MACRONYCHUS GLABRATUS Say. Dalton V, 23, 31 (6); Milledgeville V, 31, 31 (9); Monroe VI, 12, 31 (4); Ball Ground VI, 27, 31; Jasper VII, 17, 31 (2).

9642—ANCYRONYX VARIEGATUS Germ. Milledgeville V, 31 31; Monroe VI, 12, 31.

HETEROCERIDAE.

9646—HETEROCERUS UNDATUS Melsh. Thomasville VI, 19, 31.

9650—H. COLLARIS Kies. Perry VI, 21, 29.

9652—H. PUSILLUS Say. Calhoun VIII, 15, 28.

DASCILLIDAE.

9659—EURYPOGON NIGER Melsh. Blue Ridge VI, 26, 31.

9674—ECTOPRIA NERVOSA Melsh. Dahlonega VII, 9, 31.

9681—EUCINETUS MORIO Lec. Dahlonega VII, 9, 31.

HELODIDAE.

9689—HELODES THORACICA Guer. Royston VI, 13, 32.

9692—CYPHON RUFICOLLIS Say. Hartwell VI, 13, 32.

9696—C. OBSCURUS Guer. Blue Ridge VI, 14, 29.

9698—C. VARIABILIS Thunb. Savannah IV, 11, 31.

9699—C. PADI Linn. Savannah IV, 11, 31.

9703—PRIONOCYPHON DISCOIDEUS Say. Jonesboro VI, 26, 32.

9704—P. LIMBATUS Lec. Athens VI, 13, 32.

9709—SCIRTES ORBICULATUS Fab. Forsyth VI, 21, 29.

9716—PTILODACTYLA SERRICOLLIS Say. Blairsville VI, 15, 29.

DERMESTIDAE.

9725—DERMESTES CANINUS Germ. Stone Mt. VIII, 12, 32 (53); VIII, 13, 32 (20).

9732—D. VULPINUS Fab. Folkston V, 8, 32.

9734—D. FRISCHI Kug. Baxley V, 5, 30.

9770—TROGODERMA ORNATA Say. Atlanta V, 6, 27.

9785—T. VERSDOLOR Crautz. Douglasville IV, 25, 27.

9805—CRYPTORHOPALUM HAEMORRHIDALE Lec. Atlanta V, 8, 32.

9816—C. RUFICORNE Lec. Austell V, 9, 32.

9829—ANTHRENUS SCROPHULARIAE Linn. Atlanta V, 9, 32.

9836—A. FASCIATUS Herbst. Tate VI, 27, 32.

9837—A. MUSEORUM Linn. Toccoa VI, 16, 29.

9844—ORPHILUS ATER Er. Jasper VII, 17, 31.

BYRRHIDAE.

9897—CURIMOPSIS STRIGOSA Melsh. Fort Valley VI, 1, 31.

9913—EULIMNICHUS OBSCURUS Lec. Augusta VI, 9, 32.

9917—E. ATER Lec. Washington VI, 9, 32.

9918—E. NITIDULUS Lec. Cartersville VI, 20, 32.

9923—Limnichoderus ovatus Lec. Canton VII, 17, 31.

Rhysodidae.

9944—Rhysodes americanus Lap. Rome VI, 20, 32.

Ostomidae.

9957—Corticotomus cylindricus Lec. Jonesboro VI, 29, 32.

9966—Airora cylindrica Serv. Thomasville VI, 19, 31.

9976—Temnochila virescens Fab. Okefenokee Swamp V, 5, 33; V, 7, 33; Thomasville VI, 19, 31; Perry VI, 21, 29; Stone Mt. XI, 17, 29.

9977—Tenebroides mauritanicus Linn. Atlanta I, 4, 33 (3).

9985—T. semicylindricus Horn. Cordele IV, 13, 31.

9989—T. collaris Sturm. Fort Valley VI, 1. 31.

9994—T. corticalis Melsh. Ellijay VI, 27, 31.

9997—T. obtusus Horn. Jasper VII, 17, 31.

Nitidulidae.

10016—Cercometes abdominalis Er. Ellijay VII, 17, 31.

10029—Colopterus maculatus Er. Newnan VI, 28, 27.

10031—C. unicolor Say. Dalton VII, 24, 31.

10035—Conotelus obscurus Er. Madison IX, 27, 27.

10043—Carpophilus dimidiatus Fab. Columbus IX, 15, 31.

10047—C. melanopterus Er. West Point VI, 19, 32.

10050—C. tempestivus Er. Jesup VIII, 31, 30.

10060—C. antiquus Melsh. Jasper VII, 17, 31.

10064—Haptoncus luteolus Er. Athens VI, 12, 31.

10065—Nitidula bipunctata Linn. Toccoa VII, 3, 31.

10073—Epuraea helvola Er. Gainesville VIII, 16, 29.

10074—E. rufa Say. Blairsville VI, 15, 29.

10077—E. erichsoni Reit. Rockmart VIII, 7, 28.

10080—E. corticina Er. Canton VII, 17, 31.

10093—E. labilis Er. Atlanta VI, 12, 32.

10098—Stelidota geminata Say. Folkston V, 8, 32.

10099—S. octomaculata Say. Tate VII, 17, 31.

10100—S. strigosa Gyll. Clarkesville VII, 25, 31.

10105—Lobiopa undulata Say. Macon VI, 21, 29.

10109—Phenolia grossa Fab. Gainesville VIII, 1, 35.

10113—Amphicrossus ciliatus Oliv. Rockmart VIII, 7, 28.

10115—Cychramus adustus Er. Macon VI, 21, 29.

10116—C. zimmermanni Horn. Hartwell VI, 13, 32.

10117—Pocadius helvolus Er. Ellijay VI, 27, 31.

10122—Oxycnemus histrina Lec. Cartersville VI, 19, 32.

10125—Pallodes silaceus Er. Toccoa VII, 3, 31; Atlanta VII, 5, 29; X, 7, 30.

10129—Cryptarcha ampla Er. Talking Rock VII, 17, 31.

10136—Glischrochilus obtusus Say. Clarkesville VII, 25, 31.
10137—F. fasciatus Oliv. Gainesville VI, 24, 31.
10138—G. sanguinolentus Oliv. Tate VI, 27, 32.
10139—G. confluentus Say. Dahlonega VII, 9, 31.

Rhizophagidae.

10146—Rhizophagus rectus Csy. Calhoun VI, 28, 32.
10157—R. cylindricus Lec. Atlanta III, 8, 29.

Monotomidae.

10163—Monotoma fulvipes Melsh. Cleveland VII, 10, 31.
10176—Hesperobaenus rufipes Lec. Cedartown VI, 25, 32.
10179—Europs pallipennis Lec. Cornelia VII, 25, 31.

Cucujidae.

10194—Oryzaephilus surinamensis Linn. Jonesboro VII, 16, 27; Atlanta XI, 21, 29 (4).
10198—Silvanus bidentatus Fabr. Rome VII, 17, 31.
10199—S. planatus Germ. Dalton VII, 24, 31.
10204—Cathartus advena Watl. Hartwell VI, 13, 32.
10211—Catogenus rufus Fab. Newman VI, 19, 32; Stone Mt. VII, 19, 29.
10225—Laemophloeus biguttatus Say. Hiawassee V, 28, 34.
10235—L. chamaeropis Sz. Blue Ridge VI, 26, 31.
10248—L. punctatus Lec. Rockmart VI, 22, 32.
10251—L. rotundicollis Csy. Helen VII, 11, 34.
10265—Lathropus vernalis Lec. Albany VII, 30, 31.
10273—Brontes dubius Fab. Stone Mt. III, 22, 26.
10274—B. debilis Lec. Yonah Mt. V, 30, 34.
10275—Hemipeplus marginipennis Lec. Fort Valley VI, 1, 31.

Erotylidae.

10282—Languria mozardi Latr. St. Simons Island IV, 30, 36 (4); Stone Mt. V, 3, 31 (5); Kennesaw Mt. V, 13, 34 (5); Toccoa V, 14, 30; Buford V, 17, 36 (5); Yonah Mt. VI, 10, 36 (4); Atlanta VII, 8, 28; VIII, 9, 31 (2).
10283—L. discoidea Lec. Canton VII, 17, 31.
10291—L. collaris Lec. Douglasville VII, 15, 27.
10292—Acropteroxys gracilis Newm. Jonesboro VI, 12, 27.
10301—Ischyrus quadripunctatus Oliv. Jefferson VI, 12, 32.
10303—I. extricatus Cr. Albany VII, 30, 31.
10304—Pseudischyrus brunnea Lac. Atlanta VII, 8, 31.
10308—Tritoma sanguinipennis Say. Jonesboro VI, 12, 27.
10309—T. pulcher Say. Clarkesville VII, 25, 31.

10311—T. AFFINIS Lac. Ellijay VII, 17, 31.
10314—T. ANGULATA Say. Atlanta V, 24, 29 (3).
10316—T. ATRIVENTRIS Lec. Atlanta V, 24, 29 (3).
10317—T. BIGUTTATA Say. Clermont VII, 10, 31.
10319—T. HUMERALIS Fab. Toccoa V, 14, 30.
10319b—T. HUMERALIS RUFICEPS Lec. Tallulah Falls VI, 28, 31.
10327—TRIPLAX FESTIVA Lac. Rome VI, 20, 32.
10328—T. FLAVICOLLIS Lac. Macon VI, 21, 29.
10334—T. THORACICA Say. Atlanta VI, 9, 29 (3); X, 5, 30 (3); Americus VI, 20, 31.
10347—MEGALODACNE FASCIATA Fab. Griffin VI, 12, 27.
10348—M. HEROS Say. Stone Mt. VII, 12, 29 (2); VIII, 9, 28; Atlanta VIII, 6, 27 (2).

CRYPTOPHAGIDAE.

10361—LOBERUS IMPRESSUS Lec. Thomasville VI, 19, 31.
10365—TOMARUS PULCHELLUS Lec. Dahlonega VII, 9, 31.
10397—CRYPTOPHAGUS AMPUTATUS Csy. Cornelia VI, 16, 29.
10408—C. FUNGICOLA Zimm. Calhoun VI, 28, 32.

MYCETOPHAGIDAE.

10490—MYCETOPHAGUS PUNCTATUS Say. Stone Mt. IV, 28, 27 (2); Atlanta VI, 20, 29; Toccoa VII, 3, 31.
10491—M. FLEXUOSUS Say. Perry VII, 20, 29.
10492—M. SERRULATUS Csy. Blue Ridge VI, 26, 31.
10495—M. TRIBALTEATUS Csy. Blairsville VI, 15, 29.
10502—M. PINI Zieg. Cornelia VII, 25, 31.
10505—M. PLURIGUTTATUS Lec. Toccoa VI, 16, 29.
10509—TYPHAEA FUMATA Linn. Cairo VI, 18, 31.
10517—LITARGUS DIDESMUS Say. Tallulah Falls VI, 28, 31.

COLYDIIDAE.

10526—SYNCHITA LATICOLLIS Lec. Neel Gap VII, 9, 31.
10530—S. FULGINOSA Melsh. Rome VII, 17, 31.
10531—S. GRANULATA Say. Fort Valley VI, 1, 31.
10533—EUCICONES MARGINALIS Melsh. Blue Ridge VI, 26, 31.
10535—ACOLOBICUS LINEATICOLLIS Horn. Augusta VIII, 29, 30.
10536—BITOMA CARINATA Lec. Cedartown, VII, 16, 31.
10538—B. QUADRICOLLIS Horn. Griffin VI, 12, 27.
10541—B. QUADRIGUTTATA Say. Yonah Mt. V, 30, 34.
10571—LASCONOTUS PUSILLUS Lec. Lagrange VI, 19, 32.
10576—AULONIUM PARALLELOPIPEDUM Say. Blood Mt. V, 29, 32.

10578—A. TUBERCULATUM Lec. Blairsville V, 14, 31.
10580—COLYDIUM LINEOLA Say. Yonah Mt. V, 30, 31.
10586—SOSYLUS COSTATUS Lec. Augusta VI, 9, 32.
10591—PYCNOMERUS SULCICOLLIS Lec. Cartersville VII, 24, 31.
10598—CERYLON CASTANEUM Say. Dalton VI, 7, 31.
10604—PHILOTHERMUS GLABRICULUS Lec. Dahlonega VII, 9, 31.

MURMIDIIDAE.

10607—MYCHOCERUS DEPRESSUS Lec. Gainesville VI, 24, 31.

LATHRIDIIDAE.

10618—DASYCERUS CAROLINENSIS Horn. Cleveland VII, 10, 31.
10621—METOPTHALMUS AMERICANUS Mots. West Point VI, 19, 32.
10682—CORTICARIA CAROLINA Fall. Hartwell VI, 13, 32.
10712—MELANOPTHALMA AMERICANUS Mann. Yonah Mt. V, 30, 34.

ENDOMYCHIDAE.

10726—APHORISTA VITTATA Fab. Stone Mt. V, 22, 31 (27); Toccoa VI, 16, 29; Newman VI, 19, 32; Ellijay VII, 17, 31.
10727—MYCETINA PERPULCHRA Newm. Hiawassee V, 28, 34.
10734—EPIPOCUS PUNCTATUS Lec. Winder VI, 13, 32.
10736—E. BIVITTATUS Gerst. Colquit VI, 18, 31.
10744—RHYMBUS ULKEI Cr. Milledgeville V, 28, 31.
10745—R. MINOR Cr. Cornelia V, 16, 28.
10753—ENDOMYCHUS BIGUTTATUS Say. Blairsville VI, 15, 29.

PHALACRIDAE.

10772—PHALACRUS PUMILIO Lec. Blairsville VI, 15, 29.
10773—P. POLITUS Mels. Yonah Mt. VII, 12, 34.
10786—OLIBRUS PALLIPES Say. Toccoa V, 14, 30; Atlanta IX, 4, 32 (2); IX, 22, 32.
10855—STILBUS PUSILLUS Lec. Augusta VI, 9, 32.

Bees Taken by the Rev. Bernard Rotger in Southwest Colorado (Hymen.: Apoidea).

By T. D. A. COCKERELL, Boulder, Colorado.

Some years ago the Rev. Bernard Rotger, of the Theatine Fathers (Sacred Heart Parish) came from the Balearic Islands and settled at Durango, Colorado. Already a keen amateur entomologist, he took up the study of the new fauna

with enthusiasm, being in fact the first resident entomologist to work in that part of Colorado. The present short paper gives an account of a few of his captures, but there will eventually be much more to record as the result of his labors.

Tetralonia rotgeri n. sp.

♀. Length about 13 mm., anterior wing 9.4; robust, black, with pale greyish or whitish hair, the hind tibiae and basitarsi with bright ferruginous hair; hind spur of hind tibia not hooked at end. Closely related to *T. annae* Ckll., *T. patruelis* (Ckll.) and *T. pagosana* Ckll., the four being separable thus:

Clypeus not at all polished, with no sort of shining ridge; hair band of second tergite broad in middle, narrowed laterally, leaving a broad wedge-shaped black area *pagosana* Ckll.

Clypeus shining, coarsely punctured, with a more or less evident median ridge .....

Light bands on third and fourth tergites narrow, apical, occupying much less than half the exposed part of tergites; hair of venter mainly dark red (Wyoming) *patruelis* (Ckll.)

Light bands on third and fourth tergites broad, occupying more than half of exposed part of tergites.....

Abdominal hair bands broader and greyer; hair of middle of fifth tergite very dark brown.....*rotgeri* Ckll.

Abdominal hair bands narrower, on third and fourth tergites conspicuously narrower and whiter; hair of middle of fifth tergite warm reddish....*annae* Ckll.

In *T. annae* and *T. patruelis* the hair of the scutellum is divided into two eye-like light spots; this is not apparent in *T. rotgeri*. The first four tergites of *T. rotgeri* are practically covered with pale greyish hair, leaving no black area at sides of second. The basal part of the depression of second tergite is dullish, with excessively minute punctures. Hair of thorax above in the type slightly yellowish, in the cotype silvery white. Wings dusky but not reddish. Hair of venter partly black and partly white. Pygidial plate nearly as in *T. annae*, but rather broader at base.

COLORADO: Pagosa Springs, 7100 ft. alt., June 2, 1935 (Rotger 12). *Cotype* from same place, May 7, 1934. *Type* in University of Colorado Museum.

The bees obtained by Father Rotger show a mixture of

Eastern, Rocky Mountain, and Southwestern elements. Some are only known from Southwestern Colorado. I have studied only part of the collection, including the following:

ANDRENA (TRACHANDRENA) ABJUNCTA Ckll. La Posta, April 25, 1934. Female, the sculpture at base of metathorax coarser than in the type. Previously known only from Mesa Verde National Park, but I find that a specimen taken by A. Wetmore at Lake Burford, New Mexico, June 2, 1918, and determined by Viereck as *A. swenki* V. and C., is really *A. abjuncta.*

A. (T.) CRATAEGI Roberston. Pagosa Junction, May 9, 1934. Female. Described from Illinois, and widely distributed in the East and Rocky Mountains.

A. PLATYRHINA Ckll. Archuleta County, May, 1934. Female. Differs from the hitherto unique type (from Mesa Verde National Park) by flagellum dusky reddish beneath, nervures mostly ferruginous, hair bands on tergites 2 to 4 white. The abdomen is moderately shining, and the anterior wings have a dusky cloud at apex. I am assuming that the divergence from the type shown by this specimen and the *A. abjuncta* is a matter of variation only, but more material should be examined. In the case of *A. abjuncta*, it is noteworthy that the specimen was taken in April, whereas the type was taken July 6.

A. PRUNORUM Ckll. La Plata County, July 8, 1935. Male. A common species of the Rocky Mountain region. The specimen has the scape red in front, and the clypeus and lateral marks white.

A. HIRTICINCTA Provancher. Pagosa Junction, alt. 6270 ft. Sept. 6, 1935. Male, with the abdominal bands peculiar, dense and pale yellowish. The species is very widely distributed.

A. ARGEMONIS Ckll. Pagosa Junction, Aug. 14, 1934. Male. Described from New Mexico. Dr. Bequaert took it in the Platte Canyon, Colo., in July.

A. MIMETICA Ckll. Arboles, alt. 6000 ft., April 24, 1936, both sexes. This handsome blue species was described from New Mexico. It is new to Colorado.

ANTHOPHORA NEOMEXICANA Ckll. La Posta, alt. 6000 ft.,

June 19, 1935. Common in Colorado and New Mexico.

A. SIMILLIMA Cresson. Lone Tree, alt. 6800 ft., May 11, 1934. Common in Colorado.

EMPHOROPSIS CITULUS Ckll. Pagosa Junction, May 9, 1935. Two males. Previously known from a male taken in Mesa Verde National Park.

XENOGLOSSODES ERIOCARPI Ckll. Tiffany, alt. 6100 ft., Sept. 11, 1934. Female. Described from New Mexico; new to Colorado.

XENOGLOSSA PRUINOSA Say. Durango, alt. 6500 ft., Aug. 7, 1934. Both sexes. Common in the Central States and west to the Rocky Mountains. It goes east to the Atlantic Coast and southwest to Arizona.

TETRALONIA EDWARDSII Cresson. Lumberton, Rio Arriba County, New Mexico, alt. 6900 ft., June 3, 1935. Male. A western species, going east as far as Colorado.

MELISSODES OBLIQUA Say. Stollsteimer, alt. 6500 ft., July 9, 1935. Males. A very widely distributed species.

OSMIA NOVOMEXICANA Ckll. Pagosa Springs, June 2, 1935. Females. Described from New Mexico; the Colorado Agricultural College has it from Fort Collins.

LITHURGUS APICALIS Cresson. Arboles, May 25, 1934. Male. Common in Colorado.

A List of the Sarcophagidae of New York (Diptera).

By HAROLD C. HALLOCK,[1] Ithaca, New York.

In "A List of the Insects of New York" (Cornell University Agri. Exp. Sta. Mem. 101, pp. 823-826, 1928) 54 species of the family Sarcophagidae are recorded as known definitely to occur in the State. This list included two manuscript names, *Laccoprosopa avium* Curran and *Sarcophaga spuria* Curran. It seems best to drop these names from the list as *L. avium* was described in 1891 under the name of *Laccoprosopa sarcophagina* Townsend and the specimen to be designated as *S. spuria* has been lost and the description never published.

[1] The writer wishes to express his sincere appreciation to Professor Robert Matheson for his kind interest and encouragement during this study and to Mr. David G. Hall, United States Bureau of Entomology, for verification of many determinations.

Since the fall of 1934 the writer has had the opportunity to study the Cornell University collection of approximately 2000 specimens of Sarcophagidae taken in various localities in the State. The intensive collecting by Mr. F. S. Blanton, of the United States Bureau of Entomology, on Long Island produced many new records. Several other valuable records have been furnished by Mr. H. K. Townes and Mr. L. L. Pechuman of the Department of Entomology, Cornell University.

The following list of 74 species gives all the Sarcophagidae now known to occur in the State. Only new locality records are given in this paper and the reader is referred to the 1928 list for the former locality records, which are not repeated.

Subfamily AGRIINAE.

ERYTHRANDRA PICIPES B. & B. (*Brachicoma apicalis* Coq.) Black Mt., Lake George, Sept. (Aldrich).

LACCOPROSOPA SARCOPHAGINA Town. (*avium* Curr.) Ithaca. Reared from larvae parasitic on young crows by I. Dobroscky.

WOHLFAHRTIA VIGIL Walk. Lockport (Pechuman); Williamsville. Reared from young puppies (Matheson); Utica, Reared from pustules on the neck of 4 months old baby (Matheson); Florida (Frost). Jun. to Aug.

Subfamily MACRONICHIINAE.

MACRONICHIA (*Amobia* R.-D.) AURATA Coq. Owego, Ithaca (West); Tuexdo (Curran). Jun. 26 to Aug. 28.

M. CONFUNDENS Town. Tuxedo Jul. 24-28 (Curran).

Subfamily MORINIINAE.

OPSODEXIA BICOLOR Coq. Hancock, Aug. 3, Millwood, Jun. 21 (Townes).

OPPIOPSIS SHELDONI Coq. Babylon, Jul. 15 (Blanton).

Subfamily MILTOGRAMMINAE.

METOPIA CAMPESTRIS Fall. Babylon, Half-Way Hollow Hills, Islip, L. I. (Blanton); Tuxedo (Curran); Poughkeepsie (Townes). May to Sept.

M. INERMIS Allen. Owego, Ithaca (West). Jun. to Aug.

M. LEUCOCEPHALA Rossi. Poughkeepsie, Rome, Hancock (Townes) Jn. to Aug.

M. LEUCOCEPHALA Rossi. Poughkeepsie, Rome, Hancock

(Townes); Babylon, Riverhead, Heckscher Pk., L. I. (Blanton); Tuxedo (Curran). May to Sept.

M. OPACA Allen. Baiting Hollow, L. I. May 29 (Huckett).

M. TESSELLAPA Allen. Ithaca Jul.

SPHENOMETOPIA TERGATA Coq. Babylon May 18, (Blanton); N. Fairhaven Jul. 4 (West).

EURABA GRISEA Desv. Babylon (Blanton).

OPSIDIA GONIOIDES Coq. Babylon (Blanton).

PROSINELLA FULVICORNIS Coq. Babylon, Oak Beach, Fire Island, L. I. (Blanton) Yonkers (Pechuman). Jun. to Aug.

P. FUMOSA Allen. Tuxedo Jul. 23-24 (Curran).

GYMNOPROSOPA FILIPALPUS Allen. Babylon (Blanton); Middletown (Spooner); Tuxedo (Curran). Jl. to Sept.

G. POLITA Town. Babylon, Dix Hills, L. I. (Blanton) May to Aug.

HILARELLA HILARELLA Zett. Babylon (Blanton). Jun. to Sept.

OESTROHILARELLA ARISTALIS Coq. Oswego (Allen).

AMOBIA (*Pachyophthalmus*) DISTORTUS Allen. Babylon, Wyandanch (Blanton); Baiting Hollow, L. I. (Huckett); Tuxedo (Curran) Jun. to Aug.

A. FLORIDENSIS Town. Babylon (Blanton); Baiting Hollow (Huckett) Jun. to Sept.

A. SIGNATUS Meig. Baiting Hollow (Huckett); Babylon, Montauck, Islip, Wyandanch, Half-Way Hollow Hills, L. I. (Blanton), May to Aug.

SENOTAINIA LITORALIS Allen Rhinebeck Jul. 27 (Crosby).

S. RUBRIVENTRIS Macq. Baiting Hollow (Huckett); Babylon, Islip, Riverhead, L. I. (Blanton) May to Sept.

S. RUFIVENTRIS Macq. Babylon (Blanton). Jul. to Aug.

S. TRILINEATA V. d. W. Babylon, Islip, Selden, Brentwood, L. I. (Blanton); Shokan (Townes); Tuxedo (Curran). May to Aug.

TAXIGRAMMA HETERONEURA Meig. Islip Jul. 5 (Blanton).

Subfamily SARCOPHAGINAE.

HYPOPELTA SCROFA Ald. Ithaca, Jun. 14.

METOPOSARCOPHAGA IMPORTUNA Walk. (*pachyprocta* Park.) Babylon, Heckscher Pk., Dix Hills, L. I. (Blanton). May to Aug.

SARCOPHAGA ALACEDO Ald. Babylon, Aug. 5 (Blanton).

S. ALDRICHI Park. Ithaca (Hallock); Oneonta (Townes); Babylon, Herkscher Pk., L. I. (Blanton). May to Jul.

S. ATLANIS Ald. McLean; Herkimer (Shannon); Islip (Blanton) Jun. to Aug.

S. BARBATA *Thom.* (*falculata* Pand.) Babylon (Blanton). Jun. to Sept.

S. BULLATA Park. Babylon, Islip, Fire Island Beach, L. I. (Blanton) May to Aug.

S. CIMBICIS Town. Tuxedo (Curran); Brewster (Pechuman); Babylon Riverhead, Heckscher Pk., L. I. (Blanton); Poughkeepsie, Oneonta, Rome, Troy (Townes). May to Oct.

S. CINGARUS Ald. Oneonta (Townes); Babylon (Blanton); Tuxedo (Curran). Jun. to Aug.

S. CISTUDINIS Ald. Wading River. Reared from a box turtle by A. Miller, Collected in Sept. 1934.

S. COOLEYI Ald. Ithaca, May.

S. FLAVIPALPIS Ald. Ithaca; Rock City; Conquest (Shannon.) Jun. to Aug.

S. FLETCHERI Ald. Malloryville (Reared from pitcher plants by Baker & Hallock); McLean (Hallock) July.

S. FULVIPES var. TRIPLASIA V. d. W. (*dissidia* Park.) Niagara Falls.

S. HAEMORRHOIDALIS Fall. Babylon (Blanton); Tuxedo (Curran). Jun. to Sept.

S. HOUGHI Ald. Babylon, Heckscher Pk., L. I. (Blanton); Ithaca (Hallock). May to Jun.

S. HUNTERI Hough Babylon (Blanton) June 2.

S. JOHNSONI Ald. Pelham Pk., New York City (Pechuman); Babylon, Oak Beach, L. I. (Blanton). Jun. to Sept.

S. LAAKEI Hall Babylon, Aug. 5 (Blanton).

S. LATISEOTA Park. Babylon (Blanton); Tuxedo (Curran); Troy, Poughkeepsie (Townes). Jun. to Sept.

S. LATISTERNA Park. Rensselaer (Leonard); Babylon, Half-Way Hollow Hills, L. I. (Blanton); Kings Ferry (Hallock.) May to Aug.

S. L'HERMINIERI R.-D. (*communis* Park., *pallinervis* Thom.) Tuxedo (Curran); Middleport (Pechuman); Rome

(Townes); Trumbull Corners (Hallock). May to Sept.

S. MISERA var. EXUBERANS Pand. (*dux exuberans* Pand.) Ithaca. Jun. to Aug.

S. MISERA var. HARPAX Pand. Pelham Pk., New York City Aug. 1 (Pechuman).

S. MISERA var. SARRACENIOIDES Ald. (*dux sarraceniodes* Ald.) Babylon, Half-Way Hollow Hills, L. I. (Blanton); Pelham Pk., New York City (Pechuman). May to Sept.

S. NIAGARANA Park. Niagara Falls.

S. NOX Hall. Babylon, Jun. 21 (Blanton).

S. PARALLELA Ald. West Hills, L. I. Jun. 21 (Blanton).

S. PUSIOLA V. d. W. (*peniculata* Park.) Red Hook (Leonard); Tuxedo (Curran). Jun. to Sept.

S. RAPAX *Walk.* (*Helicobia helicis* Town.) Babylon (Blanton); Tuxedo (Curran); Canajoharie, Rome, Oneonta, Troy, Hancock, (Townes). May to Sept.

S. REVERSA Ald. Ithaca (Hallock) Aug. to Sept.

S. SARRACENIAE Riley. Ithaca, Jul. 1 (Hallock).

S. SCOPARIA var. *nearctic* Park. Tuxedo (Curran); Oneonta, Canadaigua (Townes). May to Sept.

S. SECURIFERA Vill. (*dalmatina* Sch.) Brooklyn (A. Miller); Yonkers (Pechuman). Jun. to Sept.

S. SETIGERA Ald. Richmond, L. I. Jun. 16 (Leonard).

S. SIMA Ald. Ithaca, Thatcher Pk. (Leonard); Conquest (Shannon); Trenton Falls (Leonard & Forbes). May to Aug.

S. SINUATA Meig. Freeville; Rome, Troy (Townes). May to Oct.

S. STIMULANS Walk. (*quadrisetosa* Coq.) Babylon (Blanton). May to Aug.

S. SUETA V. d. W. (*ochracia* Ald.) Babylon, Aug. 5 (Blanton).

S. UNCATA V. d. W. (*marginata* Ald.) Babylon, May 22 (Blanton).

S. UTILIS Ald. McLean Jun. to Sept.

S. VENTRICOSA V. d. W. (*assidua* Walk.) Babylon (Blanton); Tuxedo (Curran); Milford Center (Townes). Jun. to Oct.

S. YORKII Park. Niagara Falls.

Entomological Literature

COMPILED BY V. S. L. PATE, LAURA S. MACKEY and E. T. CRESSON, Jr.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted: but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of ENTOMOLOGICAL NEWS for 10c. The number of, or annual volume, and in some cases the part, heft, &c. the latter within ( ) follows; then the pagination follows the colon :

All continued papers, with few exceptions, are recorded only at their first installments.

(*) Papers containing new forms or names not so stated in titles, have an * within parentheses thus (*) following the pagination of reference to paper.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Note. Titles of papers containing new forms or new names will be indicated by an asterisk within parentheses at end of reference, (*).

Papers published in the Entomological News are not listed.

GENERAL.—Ahmad, T.—Importance of the study of insect ecology in applied entomology. [Ind. J. Agr. Sci.] 7: 156-167. **Bird, R. D.**—Insect photography. [4] 69: 167-170. **Cann, F. R.**—Insect damage in timber and wooden exhibits in museums. [Museums Journ.] 37: 281-291, ill. **Cotton & Good.**—Annotated list of the insects & mites associated with stored grain and cereal products, and of the arthropod parasites & predators. [U. S. D. A. Misc. Publ. no. 258] 81 pp. **Dow, R.**—Climbing for insects. [Appalachia] 21: 409-412. **Downes, J. A.**—Fossil Insects. [Proc. & Trans. S. Lond. Ent. & Nat. Hist. Soc.] 1936-37: 108-112. **Jones, F. M.**—Relative acceptability and poisonous food-plants. [107] (A) 12: 74-76. **Kesselyak, A.**—Ueber einen zweckmassig abgeanderten Exhaustor. [79] 23: 53-54, ill. **Lagos & Canevari.**—Fauna entomologica del Palomar. [104] 8: 77-80, ill. (S). **Merian, Maria Sibylla.**—von E. Ruediger. [17] 54: 391-394. **Morrison-Scott, T. C. S.**—The effectiveness of protective adaptations in insects with particular reference to an examination of stomach-contents of birds from Jidda. [93] 107, A. Gen.: 51-68. **Morse, A. P.**—The scientific work of, By R. Dow [5] 44: 1-11, ill. **Myers, J. G.**—Mimetic and other associations between neotropical insects and spiders. [107] (A) 12: 70-72. **Schneider, H.**—Entomologische Naturereignisse in Uruguay. [17] 54: 537-538. **Weiss, H. B.**—Important nursery insects of New

Jersey. [N. J. Dept. Agr.] Circ. 274, 69 pp., ill. The criminal prosecution of insects. [6] 45: 251-258. **Wheeler, Wm. Morton.**—Obituary by Melander & Carpenter. [7] 30: 433-437. Obituary. By Henderson et al. [Bull. New Eng. Mus. Nat. Hist.] No. 84: 12-17, ill.

ANATOMY, PHYSIOLOGY, ETC.—Andersen, F. S.—Ueber die metamorphose der Ceratopogoniden und Chironomiden nordost-Gronlands. [Meddl. Gronland] 116: 5-95, ill. **Beilmann, A. P.**—Social behavior in Homoptera. [5] 44: 58-59. **Benander, P.**—Die Gelechiiden-Raupen. Eine vergleichend-morphologische Untersuchung (Lep.). [Opus. Ent., Lund] 2: 49-80, ill. **Burtt, E. T.**—On the corpora allata of Dipterous insects. [Proc. Roy. Soc. Biol. Sc.] B, 124: 13-23, ill. **Butt, F. H.**—The posterior stigmatic apparatus of Trypetid larvae (Dipt.). [7] 30: 487-491, ill. **Cantrall, I. J.**—Notes on the infection of the 17-year cicada, Magicicada septendecim by the fungus, Massopora cicadina. [19] 32: 120-121. **Decary, R.**—Au sujet de la radiesthesie entomologique. [L'Amateur de Papillons] 8: 239-240. **Downes, J. A.**—The metamorphosis of Insects. [Proc. & Trans. S. Lond. Ent. & Nat. Hist. Soc.] 1936-37: 69-72. **Henson, H.**—The structure and post-embryonic development of Vanessa urticae (Lepidoptera). II. The larval malphigian tubules. [93] 107, B, Syst. & Morph.: 161-174, ill. **Hobby, B. M.**—A note on the hind-wings of a sawfly, leafhopper and moth. [107] (A) 12: 72-74, ill. **Husain & Mathur.**—Studies on Schistocerca gregaria, VIII. Influence of carbon dioxide on development of black pigmentation in S. gregaria [Ind. J. Agr. Sci.] 6: 1005-1030, ill. **Kastner, A.**—Uber die gliederung der Spinnen. [34] 119: 49-57, ill. **Kaston, B. J.**—Structural anomalies in spiders. [19] 32: 104. **Kemner, N. A.**—Die Flugel der Termitoxenien. [Opus. Ent., Lund] 2: 1-19, ill. **Landis, B. J.**—Insect hosts and nymphal development of Podisus maculiventris and Perillus bioculatus (Hemiptera). [43] 37: 252-259. **Marcu, O.**—Der Bau der Stigmen bei Hohlenkafern. [2] 33: 186-87, ill. **Mathur & Soni.**—Studies on Schistocerca gregaria IX. Some observations on the histology of the blood of the desert locust. [Ind. J. Agr. Sci.] 7: 317-325, ill. **Muirhead, T. R. C.**—Observations on the biology & larvae of the Anthomyidae. [116] 29: 273-358, ill. **Muker, D.**—A note on section cutting of insects. [Current Science, Bangalore] 6: 16-17. **Payne, N. M.**—Differential effect of environmental factors upon Microbracon hebetor and its

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OBITUARY

GEORGE HAMILTON FIELD, long an active entomological collector in southern California and formerly Curator of Insects on the staff of the San Diego Society of Natural History, died in San Diego on June 12, 1937, in his 87th year. Born in Boston, Massachusetts, on October 4, 1850, he graduated from high school at Winchester, Massachusetts, in 1868, and then took a short course at Eaton's Commercial College, Boston. Moving west in 1869, he was first a cowboy on the cattle trail between Kansas and Texas, and then worked a farm in Coffey County, Kansas. In 1884 he married Josephine Vogel, by whom he had five sons and one daughter. Leaving Kansas in 1889, he and his family went to San Diego, California, where he lived until his death. For 26 years he was head janitor of the city schools of San Diego, resigning in 1919.

His first introduction to natural history was about 1895, when, through the influence of George W. Dunn, he started a collection of beetles, using cigar boxes as cabinets. Thereafter, his interest in insects, exercised chiefly during vacations and other spare time, increased and broadened until, after his retirement in 1919, he centered his main attention upon it. He confined his personal collecting to San Diego and Imperial Counties, California, and Lower California, Mexico, but he secured good representations from other parts of North America through exchange and gift. Besides making his own collection, he collected insects for Frank A. Merrick, William Barnes, J. McDunnough, H. G. Dyar, J. B. Smith, J. A. Grossbeck, W. G. Wright, H. C. Fall, E. C. Van Dyke, A. Fenyes, W. S. Wright and others.

In 1934 he donated his entire collection, including cases, books and entomological apparatus, to the San Diego Society of Natural History. The number of insect specimens totalled some 30,000, about two-thirds of which were beetles, the remainder chiefly butterflies and moths. He was always meticulously careful in matters of preparation and arrangement, and the collection was a model in these respects. In recognition of this gift, he was elected a patron of the San Diego Society of Natural History, an honor accorded to only three other living persons. Previously he had been Secretary of the Society (1919-1920), and Curator of Insects (1920-1922).

Personally, George Field was of a modest, lovable character, possessed of a keen sense of humor, and with his own happy philosophy of life. Commercialism was furthest from his mind, and he once made the statement that the sale of two specimens of the rare scarabaeid, *Dinacoma marginata* Casey, which he took at Ocean Beach, to F. E. Blaisdell for $1.50 each was about all he ever made out of his collecting.

Primarily a collector and not a taxonomist or writer, Field published no new descriptions, and his only contribution to entomological literature was "Notes on the larvae of *Datana robusta* Strecker," Journal of the New York Entomological Society, Vol. 15, pp. 54-56, 1907. However, he discovered

about 40 species of insects that were new to science and of these he had a number named in his honor. In Lepidoptera these include: *Thaumatopsis fieldellus* B. & McD., *Tallula fieldi* B. & McD., *Tornos fieldi* Grossb., *Phasiane fieldi* Swett, *Zophodia fieldella* Dyar and *Pterophorus fieldi* Wright. In Coleoptera the following species bear his name: *Thyce fieldi* Fall, *Coniontis fieldi* Blaisdell and *Trichochrous fieldi* Blaisdell.

It is a matter of regret that Field did not live to see in print "A List of the Beetles of San Diego County, California," by Ian Moore, which was published by the San Diego Society of Natural History with the date June 15, 1937—the day of his funeral. It was based in large part upon the collections he had made.

CLINTON G. ABBOTT*.

Entomologists whose recent deaths have not been mentioned in the NEWS include VERNON LYMAN KELLOGG, professor of Entomology at Stanford University, 1894-1920, student of Mallophaga, Blepharoceridae, mouth parts of Lepidoptera and general entomological subjects, on August 8th, in his 70th year (an obituary notice by Robert A. Millikan is in *Science* for September 3, 1937); PETER WALTER CLAASEN, professor of Biology at Cornell University, writer on the Plecoptera, on August 16th, in his 52nd year; Baron WALTER ROTHSCHILD, lepidopterist, founder of a great museum at Tring, England, on August 27, aged 69; EDSON FORBES HITCHINGS, state entomologist of Maine, 1905-1911, on September 8th, aged 84 years; Dr. SIGMUND GRAENICHER, student of bees and flowers, on September 16th, in his 83rd year (an obituary notice by Prof. T. D. A. Cockerell is in *Science* for October 22, 1937); and LEON HOWARD WORTHLEY, of the U. S. Bureau of Entomology and Plant Quarantine, on October 9th, aged 60 years.

* These data based upon information furnished by Mr. Field and upon a biographical sketch in Essig's "History of Entomology," Macmillan Company, pp. 629-630, 1931.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Wanted for Cash or Exchange. — North American Butterflies in series especially from type localities and remote places. C. F. dos Passos, Mendham, New Jersey.

Wanted—Collectors desiring living pupae with cocoon attached to natural food plant of Michigan, Samia, Columbia or hybrid with S. Cecropia, write W. S. McAlpine, 575 Townsend St., Birmingham, Mich.

Wanted—North American Chrysididae for exchange or determination, with privilege of retaining duplicates. W. G. Bodenstein, Department of Entomology, Cornell University, Ithaca, New York.

Wanted—Chloropidae (Oscinidae) of the world. Study, determination or exchange. C. W. Sabrosky, Entomology Dept., Michigan State College, East Lansing, Mich.

Wanted — Heliconia from various parts of Mexico, Central and South America, especially Bolivia. Buy or exchange. F. E. Church, 15 West 67th St., New York, N. Y.

Wanted—Chrysalids of Papilio ajax and philenor, cocoons of Rothschildia orizaba and jorulla. Buy or exchange. Newark Entomological Society. Curator, Chas. Rummel, Green Village Rd., R. D. 2, Madison, New Jersey.

Have large list of Lepidoptera wants and offers. Send me yours. Carpenter, Box 1344, Hartford, Conn.

Wanted — Specimens of North American **Cephidae.** Will make determinations and exchanges for purposes of revising the group. Donald T. Ries, Department of Entomology, Cornell University, Ithaca, N. Y.

Geometers Wanted from all parts of United States and Canada, for cash or in exchange for butterflies. Noctuids or other Geometers. Edwin I. Guedet, P. O. Box 305, Napa, California.

Mr. Robert "Colegio de la Salle, Vedado, Habana, Cuba," offers Coleoptera, Lepidoptera, Land and Sea Shells, Bird Skins, Botanical Specimens, Cuban Cactus and cleaned "Diatom" Material.

Wanted for cash or exchange any pamphlets dealing with the American Hesperiidae. K. J. Hayward, Entomologist, Concordia Experiment Station, E. R. Argentine.

Wanted—*Megathymus streckeri* from S. W. Colo. or New Mex. Also from Texas. Also *M. yuccae* from Colo. Offer in exch. *Meg. leussleri* Holl. (Nebr. race *streckeri*). R. A. Leussler, 115 S. 52nd St., Omaha, Nebr.

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